



**CITY OF LODI
COUNCIL COMMUNICATION**

AGENDA TITLE: Adopt Resolution Authorizing City Manager to Execute Task Order No. 24 with Treadwell & Rollo, of Oakland (\$37,780) and Professional Services Agreement with EcoGreen Hydro Solutions, of Sunnyvale (\$45,340) for Citywide Groundwater Modeling and Analysis and Appropriating Funds (\$100,000)

MEETING DATE: August 1, 2012

PREPARED BY: Public Works Director

RECOMMENDED ACTION: Adopt resolution authorizing City Manager to execute Task Order No. 24 with Treadwell & Rollo, of Oakland, in the amount of \$37,780 and professional services agreement with EcoGreen Hydro Solutions, of Sunnyvale, in the amount of \$45,340 for citywide groundwater modeling and analysis and appropriating funds in the amount of \$100,000.

BACKGROUND INFORMATION: Management of the City's groundwater resources has become increasingly complex and important. In September 2012, the City will start up the surface water treatment plant that will reduce groundwater extraction by 7,000 acre feet per year or more than 40 percent below current levels. In addition, the City has been monitoring for many years dibromochloropropane (DBCP), volatile organic carbon compounds (VOC) and tetrachloroethene (PCE) level in the groundwater.

In 2008, Treadwell & Rollo prepared a groundwater flow and contaminant transport model (model) that has been used to predict the movement of VOCs, such as PCE, within the Central Plume Area. In February 2012, the City entered into a professional services agreement with Applied Remedial Technologies to include DBCP water quality data in the model. Results of that work identified three separate DBCP plumes in the northwest, northeast and southern areas of the City. Recently, DBCP was detected above the maximum contaminant level at Wells 6R and 17 indicating migration of DBCP from the northeast and southern plumes, respectively. Work to install GAC treatment at Well 6R is underway; however, Well 17 cannot accommodate GAC treatment due to site constraints and may have to be abandoned.

As the City brings on line the surface water treatment plant, it is appropriate to establish a new strategy for operation of the City's well field that is focused upon optimized coordination with surface water deliveries and the containment and/or treatment of the DBCP and VOC plumes that are present in the groundwater beneath the City.

The services of Treadwell & Rollo and EcoGreen Hydro Solutions (formerly Applied Remedial Technologies) will expand the model to include the Central, Southern, Western and Northern VOC plumes and the three DBCP plumes. The model will be used to simulate the migration of the plumes under various well field pumping scenarios. In addition, the model will be used to optimize locations for proposed monitoring wells in the Northern, Southern, and Western plume areas.

APPROVED:

Konradt Bartlam, City Manager

Adopt Resolution Authorizing City Manager to Execute Task Order No. 24 with Treadwell & Rollo, of Oakland (\$37,780) and Professional Services Agreement with EcoGreen Hydro Solutions, of Sunnyvale (\$45,340) for Citywide Groundwater Modeling and Analysis and Appropriating Funds (\$100,000)
August 1, 2012
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Copies of the Treadwell & Rollo Task Order No. **24** and the professional services agreement with EcoGreen Hydro Solutions are provided in Exhibit I. Staff recommends approval and the appropriation of \$100,000.

FISCAL IMPACT: Potential long-term reduction in groundwater treatment costs.

FUNDING AVAILABLE: Requested Appropriation: PCE/TCE Rates (185) – \$100,000



Jordan Ayers
Deputy City Manager/Internal Services Director

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FWS/pmf

Attachment



5 July 2012

Mr. Wally Sandelin
 Director - City of Lodi Public Works Department
 P.O. Box 3006
 Lodi, CA 95241-1910

Subject: Proposed Scope of Work for Evaluating Monitoring Well Locations
 Task Order 24
 City of Lodi, California

As requested by the City of Lodi (City) in a meeting on April 17, 2012, Treadwell & Rollo (T&R) has prepared the following Scope of Work (SOW) to simulate the migration of the volatile organic compound (VOC) groundwater plumes and determine the location and screening intervals of the planned monitoring wells for evaluating the extent and depth of the Southern and Western VOC groundwater plumes. We are also recommending adding the Northern plume to this effort as the City has begun to assess the monitoring program for this plume. T&R proposes to use the modified City of Lodi transient groundwater flow and contaminant transport model (Model) to meet the objectives of this SOW.

Five VOC plumes have been identified impacting the groundwater beneath the City limits. The Central Plume is currently undergoing source area remediation. A second plume, referred to as the Busy Bee plume, is being remediated by the responsible party and is reportedly nearing closure. The lateral and vertical extents of the three remaining plumes (the Northern, Western, and Southern plumes) are currently being evaluated. Recent water quality data collected by the City has indicated that City Wells 12 and 18 are being impacted by the migration of the Western and/or Southern VOC plumes.

The steady state groundwater flow model previously developed by T&R simulated groundwater and contaminant flow beneath the City of Lodi, and provided data to evaluate remedial alternatives for the Central Plume and design the Central Plume source area groundwater extraction and treatment system. ART modified the steady state model to a transient state model to help evaluate the impacts of the City supply wells on plume migration and also for optimizing the City water supply well field. As part of attaining the overall groundwater management objective during the optimization of the City supply well field, the migration of the VOC plumes needs to be evaluated under a transient environment. T&R proposes to use the transient model to perform the following tasks:

- Calibrate and simulate the migration of the Central, Southern, and Western Plumes using the modified transient Model;
- Simulate the migration of the Northern Plume using the modified transient Model
- Evaluate the impact of variations in City supply well extraction rates on the migration of the VOC plumes; and,
- Optimize locations for the proposed monitoring wells for the Northern, Southern & Western plumes

The modeling activities will be performed using the graphical interface modeling platform Groundwater Modeling system (GMSTM). The groundwater flow simulations will be performed using MODFLOW2000, the latest version of the U.S. Geological Survey modular finite-difference groundwater flow code.

MT3DMS will be used to simulate the migration of the VOC plumes. The modeling activities will include the following:

- Additional lithologic data and water quality datasets will be incorporated into the Model to update current conditions;
- The Central, Southern & Western plumes will be re-calibrated based on the historical VOC data and using the transient Model;
- Migration of the Central, Northern, Southern & Western plumes will be performed using the transient Model; and,
- Various extraction rates from the City supply wells will be simulated to determine their impacts on the migration of the VOC plumes.

Following the completion of the modeling simulation activities, the proposed monitoring points for the Western, Southern, and Northern VOC plumes will be evaluated to reconfirm their locations and depths. A technical memorandum will be prepared summarizing the results, and results of simulations will be presented graphically for presentation purposes. Following completion of all the modeling activities, a meeting will be conducted with the City staff to discuss and present the model and predictive results. A follow-up meeting with the Water Board is also included.

PROPOSED SCHEDULE

We estimate that the scope of work can be completed within approximately 4 to 6 weeks of receiving approval to proceed. A *Technical Memorandum / Presentation* will be submitted to the City following completion of these activities.

COST SUMMARY

We propose to perform the work on a time-and-expense basis in accordance with terms of the City of Lodi Professional Services Agreement. We have estimated the following costs for Tasks 24a through 24e. The costs of this Scope of Work will not exceed an amount of \$37,780 without your prior authorization.

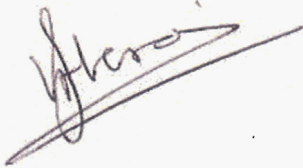
Tasks	Budget
Task 24a – Transient Simulation of VOC Plumes	\$ 14,140
Task 24b – Sensitivity Analysis	\$ 2,720
Task 24c – Evaluation of Monitoring Point Locations	\$ 2,480
Task 24d – Technical Memorandum / Presentation	\$ 11,240
Task 24e – Meetings (2 meetings)	\$ 7,200
TOTAL ESTIMATED COSTS	\$ 37,780

*Proposal for Scope of Work for Evaluating Monitoring Well Locations
Task Order 24
City of Lodi, California*

*5 July 2012
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In summary, the modified transient Model will be used to simulate the migration of the VOC plumes and evaluate the locations and depths of the proposed monitoring points. We appreciate the opportunity to assist the City of Lodi. Please contact Mr. Oberoi at (415) 424-3009 or Mr. Smith at 415-955-5249 if you need any further information.

Sincerely,
Treadwell & Rollo, A Langan Company



Varinder S. Oberoi, PE
Principal Hydrologist



Philip G. Smith, REA II
Executive Vice President

Konrad Bartlam
City Manager

D. Stephen Schwabauer
City Attorney



Randi Johl
City Clerk

AGREEMENT FOR PROFESSIONAL SERVICES

ARTICLE 1 PARTIES AND PURPOSE

Section 1.1 Parties

THIS AGREEMENT is entered into on _____, 2012, by and between the CITY ~~OF~~ LODI, a municipal corporation (hereinafter "CITY"), and ECOGREEN HYDRO SOLUTIONS (hereinafter "CONTRACTOR").

Section 1.2 Purpose

CITY selected the CONTRACTOR to provide the services required in accordance with attached Scope of Services, Exhibit A, attached and incorporated by this reference.

CITY wishes to enter into an agreement with CONTRACTOR for optimization of the City of Lodi supply well field (hereinafter "Project") as set forth in the Scope of Services attached here as Exhibit A. CONTRACTOR acknowledges that it is qualified to provide such services to CITY.

ARTICLE 2 SCOPE ~~OF~~ SERVICES

Section 2.1 Scope of Services

CONTRACTOR, for the benefit and at the direction of CITY, shall perform the Scope of Services as set forth in Exhibit A.

Section 2.2 Time For Commencement and Completion of Work

CONTRACTOR shall commence work pursuant to this Agreement, upon receipt of a written notice to proceed from CITY or on the date set forth in Section 2.6, whichever occurs first, and shall perform all services diligently and complete work under this Agreement based on a mutually agreed upon timeline or as otherwise designated in the Scope of Services.

CONTRACTOR shall submit to CITY such reports, diagrams, drawings and other work products as may be designated in the Scope of Services.

CONTRACTOR shall not be responsible for delays caused by the failure of CITY staff to provide required data or review documents within the appropriate time frames. The review time by CITY and any other agencies involved in the project shall not be

counted against CONTRACTOR's contract performance period. Also, any delays due to weather, vandalism, acts of God, etc., shall not be counted. CONTRACTOR shall remain in contact with reviewing agencies and make all efforts to review and return all comments.

Section 2.3 Meetings

CONTRACTOR shall attend meetings as may be set forth in the Scope of Services.

Section 2.4 Staffing

CONTRACTOR acknowledges that CITY has relied on CONTRACTOR's capabilities and on the qualifications of CONTRACTOR's principals and staff as identified in its proposal to CITY. The Scope of Services shall be performed by CONTRACTOR, unless agreed to otherwise by CITY in writing. CITY shall be notified by CONTRACTOR of any change of Project Manager and CITY is granted the right of approval of all original, additional and replacement personnel at CITY's sole discretion and shall be notified by CONTRACTOR of any changes of CONTRACTOR's project staff prior to any change.

CONTRACTOR represents it is prepared to and can perform all services within the Scope of Services (Exhibit A) and is prepared to and can perform all services specified therein. CONTRACTOR represents that it has, or will have at the time this Agreement is executed, all licenses, permits, qualifications, insurance and approvals of whatsoever nature are legally required for CONTRACTOR to practice its profession, and that CONTRACTOR shall, at its own cost and expense, keep in effect during the life of this Agreement all such licenses, permits, qualifications, insurance and approvals, and shall indemnify, defend and hold harmless CITY against any costs associated with such licenses, permits, qualifications, insurance and approvals which may be imposed against CITY under this Agreement.

Section 2.5 Subcontracts

Unless prior written approval of CITY is obtained, CONTRACTOR shall not enter into any subcontract with any other party for purposes of providing any work or services covered by this Agreement.

Section 2.6 Term

The term of this Agreement commences on August 1, 2012 and terminates upon the completion of the Scope of Services or on June 30, 2013, whichever occurs first.

ARTICLE 3

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Section 3.1 Compensation

CONTRACTOR's compensation for all work under this Agreement shall conform to the provisions of the Fee Proposal, attached hereto as Exhibit B and incorporated by this reference.

CONTRACTOR shall not undertake any work beyond the scope of this Agreement unless such additional work is approved in advance and in writing by CITY.

Section 3.2 Method of Payment

CONTRACTOR shall submit invoices for completed work on a monthly basis, or as otherwise agreed, providing, without limitation, details as to amount of hours, individual performing said work, hourly rate, and indicating to what aspect of the Scope of Services said work is attributable. CONTRACTOR's compensation for all work under this Agreement shall not exceed the amount of the Fee Proposal.

Section 3.3 Costs

The Fee Proposal shall include all reimbursable costs required for the performance of the Scope of Services. Payment of additional reimbursable costs considered to be over and above those inherent in the original Scope of Services shall be approved in advanced and in writing, by CITY.

Section 3.4 Auditing

CITY reserves the right to periodically audit all charges made by CONTRACTOR to CITY for services under this Agreement. Upon request, CONTRACTOR agrees to furnish CITY, or a designated representative, with necessary information and assistance needed to conduct such an audit.

CONTRACTOR agrees that CITY or its delegate will have the right to review, obtain and copy all records pertaining to performance of this Agreement. CONTRACTOR agrees to provide CITY or its delegate with any relevant information requested and shall permit CITY or its delegate access to its premises, upon reasonable notice, during normal business hours for the purpose of interviewing employees and inspecting and copying such books, records, accounts, and other material that may be relevant to a matter under investigation for the purpose of determining compliance with this requirement. CONTRACTOR further agrees to maintain such records for a period of three (3) years after final payment under this Agreement.

ARTICLE 4
MISCELLANEOUS PROVISIONS

Section 4.1 Nondiscrimination

In performing services under this Agreement, CONTRACTOR shall not discriminate in the employment of its employees or in the engagement of any sub CONTRACTOR on the basis of race, color, religion, sex, sexual orientation, marital status, national origin, ancestry, age, or any other criteria prohibited by law.

Section 4.2 ADA Compliance

In performing services under this Agreement, CONTRACTOR shall comply with the Americans with Disabilities Act (ADA) of 1990, and all amendments thereto, as well as all applicable regulations and guidelines issued pursuant to the ADA.

Section 4.3 Indemnification and Responsibility for Damage

CONTRACTOR to the fullest extent permitted by law, shall indemnify and hold harmless CITY, its elected and appointed officials, directors, officers, employees and volunteers from and against any claims, damages, losses, and expenses (including reasonable attorney's fees), arising out of performance of the services to be performed under this Agreement, provided that any such claim, damage, loss, or expense is caused by the negligent acts, errors or omissions of CONTRACTOR, any subcontractor employed directly by CONTRACTOR, anyone directly or indirectly employed by any of them, or anyone for whose acts they may be liable, except those injuries or damages arising out of the active negligence of the City of Lodi or its officers or agents.

Section 4.4 No Personal Liability

Neither the City Council, nor any other officer or authorized assistant or agent or City employee shall be personally responsible for any liability arising under this Agreement.

Section 4.5 Responsibility of CITY

CITY shall not be held responsible for the care or protection of any material or parts of the work described in the Scope of Services prior to final acceptance by CITY, except as expressly provided herein.

Section 4.6 Insurance Requirements for CONTRACTOR

CONTRACTOR shall take out and maintain during the life of this Agreement, insurance coverage as set forth in Exhibit C attached hereto and incorporated by this reference.

Section 4.7 Successors and Assigns

CITY and CONTRACTOR each bind themselves, their partners, successors, assigns, and legal representatives to this Agreement without the written consent of the others. CONTRACTOR shall not assign or transfer any interest in this Agreement without the prior written consent of CITY. Consent to any such transfer shall be at the sole discretion of CITY.

Section 4.8 Notices

Any notice required to be given by the terms of this Agreement shall be in writing signed by an authorized representative of the sender and shall be deemed to have been given when the same is personally served or upon receipt by express or overnight delivery, postage prepaid, or three (3) days from the time of mailing if sent by first class or certified mail, postage prepaid, addressed to the respective parties as follows:

To CITY: City of Lodi
221 West Pine Street
P.O. Box 3006
Lodi, CA 95241-1910
Attn: Wally Sandelin, Public Works Director

To CONTRACTOR: EcoGreen Hydro Solutions
581 Montego Terrace
Sunnyvale, CA 94089
Attn: Varinder Oberoi

Section 4.9 Cooperation of CITY

CITY shall cooperate fully and in a timely manner in providing relevant information it has at its disposal relevant to the Scope of Services.

Section 4.10 CONTRACTOR is Not an Employee of CITY

CONTRACTOR agrees that in undertaking the duties to be performed under this Agreement, it shall act as an independent contractor for and on behalf of CITY and not an employee of CITY. CITY shall not direct the work and means for accomplishment of the services and work to be performed hereunder. CITY, however, retains the right to require that work performed by CONTRACTOR meet specific standards without regard to the manner and means of accomplishment thereof.

Section 4.11 Termination

CITY may terminate this Agreement, with or without cause, by giving CONTRACTOR at least ten (10) days written notice. Where phases are anticipated within the Scope of Services, at which an intermediate decision is required concerning whether to proceed further, CITY may terminate at the conclusion of any such phase.

Upon termination, CONTRACTOR shall be entitled to payment as set forth in the attached Exhibit B to the extent that the work has been performed. Upon termination, CONTRACTOR shall immediately suspend all work on the Project and deliver any documents or work in progress to CITY. However, CITY shall assume no liability for costs, expenses or lost profits resulting from services not completed or for contracts entered into by CONTRACTOR with third parties in reliance upon this Agreement.

Section 4.12 Confidentiality

CONTRACTOR agrees to maintain confidentiality of all work and work products produced under this Agreement, except to the extent otherwise required by law or permitted in writing by CITY. CITY agrees to maintain confidentiality of any documents owned by CONTRACTOR and clearly marked by CONTRACTOR as "Confidential" or "Proprietary", except to the extent otherwise required by law or permitted in writing by CONTRACTOR. CONTRACTOR acknowledges that CITY is subject to the California Public Records Act.

Section 4.13 Applicable Law, Jurisdiction, Severability, and Attorney's Fees

This Agreement shall be governed by the laws of the State of California. Jurisdiction of litigation arising from this Agreement shall be venued with the San Joaquin County Superior Court. If any part of this Agreement is found to conflict with applicable laws, such part shall be inoperative, null, and void insofar as it is in conflict with said laws, but the remainder of this Agreement shall be in force and effect. In the event any dispute between the parties arises under or regarding this Agreement, the prevailing party in any litigation of the dispute shall be entitled to reasonable attorney's fees from the party who does not prevail as determined by the San Joaquin County Superior Court.

Section 4.14 City Business License Requirement

CONTRACTOR acknowledges that Lodi Municipal Code Section 3.01.020 requires CONTRACTOR to have a city business license and CONTRACTOR agrees to secure such license and pay the appropriate fees prior to performing any work hereunder.

Section 4.15 Captions

The captions of the sections and subsections of this Agreement are for convenience only and shall not be deemed to be relevant in resolving any question or interpretation or intent hereunder.

Section 4.16 Integration and Modification

This Agreement represents the entire understanding of CITY and CONTRACTOR as to those matters contained herein. No prior oral or written understanding shall be of any force or effect with respect to those matters covered hereunder. This Agreement may not be modified or altered except in writing, signed by both parties.

Section 4.17 Contract Terms Prevail

All exhibits and this Agreement are intended to be construed as a single document. Should any inconsistency occur between the specific terms of this Agreement and the attached exhibits, the terms of this Agreement shall prevail.

Section 4.18 Severability

The invalidity in whole or in part of any provision of this Agreement shall not void or affect the validity of any other provision of this Agreement.

Section 4.19 Ownership of Documents

All documents, photographs, reports, analyses, audits, computer media, or other material documents or data, and working papers, whether or not in final form, which have been obtained or prepared under this Agreement, shall be deemed the property of CITY. Upon CITY's request, CONTRACTOR shall allow CITY to inspect all such documents during CONTRACTOR's regular business hours. Upon termination or completion of services under this Agreement, all information collected, work product and documents shall be delivered by CONTRACTOR to CITY within ten (10) calendar days.

CITY agrees to indemnify, defend and hold CONTRACTOR harmless from any liability resulting from CITY's use of such documents for any purpose other than the purpose for which they were intended.

Section 4.20 Authority

The undersigned hereby represent and warrant that they are authorized by the parties to execute this Agreement.

Section 4.21 Federal Transit Funding Conditions

☐ If the box at left is checked, the Federal Transit Funding conditions attached as Exhibit apply to this contract, In the event of a conflict between the terms of this contract or any of its other exhibits, and the Federal Transit Funding Conditions, the Federal Transit Funding Conditions will control.

IN WITNESS WHEREOF, CITY and CONTRACTOR have executed this Agreement as of the date first above written.

CITY OF LODI, a municipal corporation


ATTEST:

RANDI JOHL
City Clerk

KONRADT BARTLAM, City Manager

APPROVED AS TO FORM:
D. STEPHEN SCHWABAUER, City Attorney
JANICE D. MAGDICH, Deputy City Attorney

CONTRACTOR:

By: _____


By: _____
Name: VARINDER S. OBEROI
Title: Principal Hydrologist

Attachments:
Exhibit A – Scope of Services
Exhibit B – Fee Proposal
Exhibit C – Insurance Requirements

Funding Source: 185124
(Business Unit & Account No.)

Doc ID: Projects/Water/PCETCE/EcoGreenHydroSolutions

CA:rev.01.2012

EcoGreen Hydro Solutions
Environmental/Hydrology/Civil

June 26, 2012

Charlie Swimley
City of Lodi Public Works Department
P.O. Box 3006
Lodi, CA 95241-1910

Subject: Scope of Work for Optimization of the City of Lodi Supply Well Field, City of Lodi, CA

As requested by the City of Lodi (City), EcoGreen Hydro Solutions, Inc. (EHS) has prepared the following Scope of Work (SOW) to optimize the City of Lodi supply well field as part of the City's efforts to streamline its management of groundwater resources. EHS proposes to use the City groundwater flow and contaminant transport model (Model) originally developed as a steady state model by Treadwell & Rollo (T&R) in 2007 and modified to a transient state model by Applied Remedial Technologies (ART) in 2012 to meet the objectives of the SOW.

BACKGROUND

The City of Lodi Water Utility (Utility) is the sole water purveyor for the City. The Utility's service area is contiguous with the City boundaries, covers approximately 12 square miles, and includes a mix of residential, commercial, and industrial land use. The annual water demand for the City is ~15,000 acre feet per year (AFY) and the projected annual water demands are expected to have increased from current demands by approximately 20 percent to 18,200 AFY in 2035 (*Source - City of Lodi 2010 Urban Water Management Plan*). The City currently uses groundwater as its primary source of supply. In 2003, the City entered into an agreement with Woodbridge Irrigation District (WID) to purchase up to 7,000 AFY of surface water, and a surface water treatment facility (SWTF) is currently under construction to treat the water for distribution. The SWTF is anticipated to be on-line in November 2012.

Water supply from the City's groundwater supply wells is considered to be very consistent. However, the groundwater basin underlying the City is in overdraft, and groundwater levels are decreasing by approximately 0.39 feet per year. Additionally, historical and recent groundwater quality data collected from the City supply wells have indicated the presence of contaminants in the City supply wells.

Dibromochloropropane (DBCP) has historically been identified above the MCL of 0.20 µg/L in City supply wells 8, 12, 16, 18, 19, 20, 22, and 23 that are located in the southern part of the City (south of Kettleman), City supply wells 13 and 14 that are along the western edge of the City, and in City supply wells 1R and 4R along the eastern edge of the City (east of Hwy 99). However, water quality data from 2011 has indicated that DBCP plume has migrated towards City supply wells 6R, 17, and 28. City supply wells 16, 18, 20, 22, and 23 are equipped with well head granular activated carbon (GAC) treatment systems to remove DBCP from groundwater prior to incorporating it to the City groundwater supply. A recent evaluation of the DBCP plume migration using the transient Model indicated the following –

- The DBCP plume could be separated into three separate areas – the Northwest, Northeast, and Southern plume areas, with each area possibly being impacted by residual DBCP sources in Shallow or Intermediate Zones (< 100 ft-bgs)
- The presence of DBCP in City supply well 6R could be attributed to migration of the DBCP plume located Northeast of well 6R at City supply wells 1R and 4R (Northeast DBCP plume)
- The presence of DBCP in City supply well 17 could be attributed to the migration of the southern DBCP plume due to pumping from City supply well 17 and/or migration of a residual DBCP plume that may be prevalent west/northwest of City supply well 17 (Northwest DBCP plume).

This residual Northwest DBCP plume may have also been the source for DBCP concentrations observed previously in City supply wells 13 and 14. However, the extent of the DBCP plume in this area is unknown.

- The current pumping rate in City supply well 17 controls the migration of the northwest and southern DBCP plumes towards it, and also prevents the migration of the DBCP plume towards City supply wells north of it (City supply wells 9 and 13)

Five groundwater contaminant plumes, comprising primarily of volatile organic compounds (VOCs) like tetrachloroethene (PCE) and trichloroethylene (TCE), have also been identified impacting the groundwater beneath the City limits. One of these plumes, the Central Plume, is currently undergoing source area remediation. A second plume, referred to as the Busy Bee plume, is being remediated by the responsible party, and is reportedly nearing closure. Recent water quality data collected by the City has indicated that City supply wells 12 and 18 are being impacted by the migration of the Western and/or Southern VOC plumes. As part of its efforts for evaluating the extents of the three remaining plumes (the Northern, Western, and Southern plumes), the City is currently in the process of applying the transient Model to simulate the migration of the VOC groundwater plumes and determine the location and screening intervals of the planned monitoring wells for evaluating the extents of these VOC plumes.

The City is currently looking to optimize its supply well field following the startup of the SWTF such that it satisfies the City's needs for protection of its groundwater resources by limiting the overdraft of the groundwater basin underlying the City. Additionally, the City wants to optimize the pumping from the supply wells such that it impedes the migration of the contaminant plumes to additional City supply wells (City supply well 13 and City supply wells south of well 12 for the DBCP and VOC plumes, respectively). The following sections outline EHS's technical approach and the Scope of Work for optimizing the City supply well field and attaining the groundwater management objectives of the City.

TECHNICAL APPROACH

Efficient aquifer management strategies involves the prediction of groundwater movement and contaminant transport using numerical simulation models by linking groundwater flow modeling with numerical optimization techniques. A groundwater optimization model can hence be used as a tool to design optimal groundwater management and plume stabilization systems as defined by quantitative performance measures.

The City is currently in the process of providing 7000 AF of treated surface water to its residents from November 1 following the startup of the SWTP. Prior to that, the City has to determine the extraction rates of its water supply wells such that there is no disruption in the supply of water to its residents. Additionally, the City also wants to ensure that any change to the extraction rates of its water supply wells does not impact the migration or hydraulic containment of the DBCP and VOC plumes that are present in the groundwater beneath the City.

As part of our technical approach in attaining the overall groundwater management objective of the City, EHS proposes the following –

1. Apply the existing transient Model to optimize the pumping rates of the City supply wells following the startup of the SWTP. The optimization of the City supply wells extraction rates will also ensure that hydraulic containment and stabilization of the DBCP and VOC plumes is maintained following the startup of the SWTP.
2. Evaluate and recommend the appropriate methodology to estimate the horizontal and vertical extents of the Northwest DBCP plume.

3. Perform a feasibility evaluation of groundwater pumping control systems like Variable Frequency Drive (VFD) or level controls that would help determine the most economic method for controlling the extraction of groundwater from the City supply well field.

EHS' will perform the following Tasks as part of our proposed technical approach:

1. Evaluation of City Supply Well Field

Prior to the application of the optimization modules, EHS will evaluate the City supply well field to understand the current pumping schedules of the wells and the mechanism that controls the pumping schedule and rates for these supply wells. EHS anticipates a meeting with the City staff to discuss the current day to day working of the City supply well system, including the evaluation of the WaterCAD software used for modeling the City-wide water distribution system and a walk through the City's supply well center. This will be useful for the allocation of pumping rates during the optimization simulations for the City supply wells.

2. Optimization of the City Supply Well Field

The Model will be updated and modified for the optimization simulations using the graphical interface modeling platform **Groundwater Vistas (GV™)**. Though other optimization modules, like Brute Force, are available for performing optimization, EHS proposes using the **Groundwater-Management (GWM) Process** to solve the broad range of transient groundwater-management problems by combined use of simulation-and optimization-modeling techniques. EHS will use GWM to optimize the City supply well field by limiting groundwater-level declines and managing groundwater withdrawals, and conjunctively using groundwater and surface-water resources. The groundwater flow simulations will be performed using **MODFLOW2005**, the latest version of the U.S. Geological Survey modular finite-difference groundwater flow code. **MODPATH** will be used to simulate the particle-tracking and capture zones of the supply wells. **MT3DMS** will be used to simulate the migration of the contaminant plumes in determining whether plume stabilization and control has been achieved following the optimization of the City supply well field.

3. Evaluation of the Extent of Northwest DBCP Plume

As stated previously, Model simulations of the DBCP plume indicated that the DBCP concentrations observed at City supply well 17 could be attributed to the migration of the DBCP plume from areas south and/or west/northwest of City supply well 17, and also to the presence of the remnants of a DBCP source in the Shallow and Intermediate zones (<100 feet below ground surface [ft-bgs]). Furthermore, the rate of pumping from City supply well 17 significantly impacted the migration of the DBCP plume within its vicinity. It is our understanding that the City is looking at provisions to prevent the migration of the DBCP plume towards City supply well 17 and/or other City supply wells 9, 13, and 14, which are located north of City supply well 17. However, the City does not have any definition the DBCP plume extent in the vicinity of City supply well 17.

EHS suggests that we first evaluate the extent of the Northwest DBCP Plume prior to outlining a definitive approach for preventing the migration of DBCP to City supply well 17 or areas north of City supply well 17. EHS proposes to do this by first evaluating the different approaches like sampling of domestic/Ag wells that are located west/northwest of City supply well 17, discrete depth sampling in City supply wells 17 and/or 20 to determine the impacted intervals/zones within the subsurface formations, and installation of a multi-screened monitoring well to sample the groundwater at specific depths.

4. Feasibility Evaluation of Groundwater Pumping Control Systems

As part of attaining the overall groundwater management objectives of the city, EHS proposes performing a feasibility evaluation the following options to control / reduce the pumping of groundwater from City supply wells:

1. Throttling of the discharge control valve or a by-pass valve
2. Turn on and off the groundwater pumping system or use of similar techniques, for e.g. installation of hi-lo levels controls in the City supply wells
3. Installation of Variable Frequency Drive (VFD) to the groundwater pumping system

Results of this feasibility evaluation will provide the City with the most cost effective and technically feasible option to control groundwater pumping from the City supply wells following optimization of the City supply well field.

5. Technical Memorandum

Following completion of the Proposal activities, a technical memorandum will be prepared summarizing the results and our recommendations for optimizing the City supply well field. The Memo will at a minimum include the following deliverables –

- Results of the optimization simulations including a schedule outlining the pumping rates for the City supply wells following the startup of the SWTP
- Different approaches for determining the extent of the Northwest DBCP plume
- Cost-benefit analysis of VFDs with time frame of ROI (return of investment) and a procurement list of the VFD equipment

6. Meetings

Prior to start of the optimization activities, an initial meeting will be held with the City staff to discuss all pertinent issues related to the Project. Following completion of the Proposal activities, a meeting will be conducted with the City staff to discuss and present the predictive results.

PROPOSED SCHEDULE

EHS estimates that the scope of work can be completed within approximately 8 weeks of receiving approval to proceed. A *Technical Memorandum* will be submitted to the City following completion of the SOW activities. However, the schedule could be modified as needed to accommodate delays that are triggered by circumstances outside the influence of EHS.

COST SUMMARY

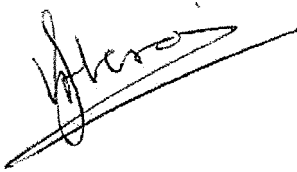
We propose to perform the work on a time-and-expense basis in accordance with terms of the City of Lodi Professional Services Agreement. We have estimated the following costs for Tasks 1 through 5. Additionally, the costs of this Scope of Work will not exceed an amount of \$ 50,000.

Task 1 – Evaluation of City Supply Wells	\$ 2,640
Task 2 – Simulation & Optimization of the City Well Field	\$22,340
Task 3 – Evaluation of NW DBCP Plume	\$ 3,120
Task 4 – Feasibility Evaluation of Groundwater Pumping Control Systems	\$ 6,240
Task 5 – Technical Memorandum	\$ 8,240
Task 6 – Meetings (3 meetings)	\$ 2,760
TOTAL ESTIMATED COSTS	\$45,340

In summary, the optimization of the City supply well field will allow the City to effectively manage its groundwater resources as well as attain stabilization of its DBCP and VOC plumes. We appreciate the opportunity to assist the City of Lodi in attaining their groundwater objectives. Please contact me at (415)424-3009 if you need any further information.

Sincerely,

ECOGREEN HYDRO SOLUTIONS, INC.



Varinder S. Oberoi, PE
Principal Hydrologist

COST ESTIMATE FOR OPTIMIZATION OF CITY WELL FIELD CITY OF LODI			
TASK/CATEGORY	Rate	Proposed Costs	
		Units	Cost
Task 1 EVALUATION OF CITY SUPPLY WELLS			
<i>LABOR</i>			
Engineer	110.00	12	1,320.00
Modeler / Hydrogeologist	110.00	12	1,320.00
GIS / AUTOCAD Specialist	90.00		
Staff / Technician	75.00		
SUBTOTAL - Task 1			2,640.00
Task 2 SIMULATION & OPTIMIZATION OF CITY WELL FIELD			
<i>LABOR</i>			
Principal	120.00	12	1,440.00
Modeler / Hydrogeologist	110.00	190	20,900.00
GIS / AUTOCAD Specialist	90.00		
Staff / Technician	75.00		
SUBTOTAL - Task 2			22,340.00
Task 3 EVALUATION OF MIGRATION OF NW DBCP PLUME			
<i>LABOR</i>			
Principal	120.00	4	480.00
Modeler / Hydrogeologist	110.00	24	2,640.00
GIS / AUTOCAD Specialist	90.00		
Staff / Technician	75.00		
SUBTOTAL - Task 3			3,120.00
Task 4 FEASIBILITY EVALUATION OF GROUNDWATER PUMPING CONTROL SYSTEMS			
<i>LABOR</i>			
Principal	120.00	8	960.00
Senior Engineer	110.00	48	5,280.00
GIS / AUTOCAD Specialist	90.00		
Staff / Technician	75.00		
SUBTOTAL - Task 4			6,240.00
Task 5 TECHNICAL REPORT			
<i>LABOR</i>			
Principal	120.00	20	2,400.00
Modeler / Hydrogeologist / Engineer	110.00	40	4,400.00
GIS / AUTOCAD Specialist	90.00	16	1,440.00
Staff / Technician	75.00		
SUBTOTAL - Task 5			8,240.00
Task 6 MEETINGS (2 Nos.)			
<i>LABOR</i>			
Principal	120.00	12	1,440.00
Modeler / Hydrogeologist	110.00	12	1,320.00
GIS / AUTOCAD Specialist	90.00		
Staff / Technician	75.00		
SUBTOTAL - Task 6			2,760.00
TOTAL			45,340.00

NOTE

1. Task 2 also represents the simulation of the DBCP and VOC plumes following optimization of the City well supply



Insurance Requirements for Contractor The Contractor shall take out and maintain during the life of this contract, insurance coverage as listed below. These insurance policies shall protect the Contractor and any subcontractor performing work covered by this contract from claims for damages for personal injury, including accidental death, as well as from claims for property damages, which may arise from Contractor's operations under this contract, whether such operations be by Contractor or by any subcontractor or by anyone directly or indirectly employed by either of them, and the amount of such insurance shall be as follows:

- | | |
|--|--|
| 1. <u>COMPREHENSIVE GENERAL LIABILITY</u>
\$1,000,000 Ea. Occurrence
\$2,000,000 Aggregate | 2. <u>COMPREHENSIVE AUTOMOBILE LIABILITY</u>
\$1,000,000 - Ea. Occurrence |
| 3. <u>PROFESSIONAL LIABILITY / ERRORS AND OMISSIONS</u>
\$1,000,000 Ea. Occurrence | |

NOTE: Contractor agrees and stipulates that any insurance coverage provided to the City of Lodi shall provide for a claims period following termination of coverage which is at least consistent with the claims period or statutes of limitations found in the California Tort Claims Act (California Government Code Section 810 et seq.).

NOTE: (1) The street address of the CITY OF LODI must be shown along with (a) and (b) above: 221 West Pine Street, Lodi, California, 95241-1910; (2) The insurance certificate must state, on its face or as an endorsement, a description of the project that it is insuring.

A copy of the certificate of insurance with the following endorsements shall be furnished to the City:

- (a) Additional Named Insured Endorsement
Such insurance as is afforded by this policy shall also apply to the City of Lodi, its elected and appointed Boards, Commissions, Officers, Agents, Employees, and Volunteers as additional named insureds.
(This endorsement shall be on a form furnished to the City and shall be included with Contractor's policies.)
- (b) Primary Insurance Endorsement
Such insurance as is afforded by the endorsement for the Additional Insureds shall apply as primary insurance. Any other insurance maintained by the City of Lodi or its officers and employees shall be excess only and not contributing with the insurance afforded by this endorsement.
- (c) Completed Operations Endorsement
For three years after completion of project, a certificate of insurance with a Completed Operations Endorsement, CG 20 37 07 04, will be provided to the City of Lodi.
- (d) Severability of Interest Clause
The term "insured" is used severally and not collectively, but the inclusion herein of more than one insured shall not operate to increase the limit of the company's liability.
- (e) Notice of Cancellation or Change in Coverage Endorsement
This policy may not be canceled nor the coverage reduced by the company without 30 days' prior written notice of such cancellation or reduction in coverage to the Risk Manager, City of Lodi, 221 W. Pine St., Lodi, CA 95240.

Compensation Insurance The Contractor shall take out and maintain during the life of this contract, Worker's Compensation Insurance for all of Contractor's employees employed at the site of the project and, if any work is sublet, Contractor shall require the subcontractor similarly to provide Worker's Compensation Insurance for all of the latter's employees unless such employees are covered by the protection afforded by the Contractor. In case any class of employees engaged in hazardous work under this contract at the site of the project is not protected under the Worker's Compensation Statute, the Contractor shall provide and shall cause each subcontractor to provide insurance for the protection of said employees. A waiver of subrogation is required for workers compensation insurance. This policy may not be canceled nor the coverage reduced by the company without 30 days' prior written notice of such cancellation or reduction in coverage to the Risk Manager, City of Lodi, 221 W. Pine St., Lodi, CA 95240.

NOTE: No contract agreement will be signed nor will *any* work begin on a project until the proper insurance certificate is received by the City.

1. AA# _____

2. JV# _____

CITY OF LODI APPROPRIATION ADJUSTMENT REQUEST

TO:	Internal Services Dept. - Budget Division		
3. FROM:	Rebecca Areida-Yadav	5. DATE:	07/17/2012
4. DEPARTMENT/DIVISION: Public Works			

6. REQUEST ADJUSTMENT OF APPROPRIATION AS LISTED BELOW

	FUND #	BUS. UNIT #	ACCOUNT #	ACCOUNT TITLE	AMOUNT
A. SOURCE OF FINANCING	185		3205	Fund Balance	\$ 100,000.00
B. USE OF FINANCING	185	185124	7323	Task 24 - SVE/GWETS Optimization	\$ 100,000.00

7. REQUEST IS MADE TO FUND THE FOLLOWING PROJECT NOT INCLUDED IN THE CURRENT BUDGET

Please provide a description of the project, the total cost of the project, as well as justification for the requested adjustment. If you need more space, use an additional sheet and attach to this form.

Task Order 24 with Treadwell & Rollo and professional services agreement with EcoGreen Hydro Solutions for groundwater modeling and analysis

If Council has authorized the appropriation adjustment, complete the following

Meeting Date _____ Res No: _____ Attach copy of resolution to this form.

Department Head Signature *Theresa Sander*

8. APPROVAL SIGNATURES

Deputy City Manager/Internal Services Manager _____ Date _____

Submit completed form to the Budget Division with any required documentation
Final approval will be provided in electronic copy format.

RESOLUTION NO. 2012-116

A RESOLUTION OF THE LODI CITY COUNCIL AUTHORIZING
CITY MANAGER TO EXECUTE TASK ORDER NO. 24 WITH
TREADWELL & ROLLO AND PROFESSIONAL SERVICE
AGREEMENT WITH ECOGREEN HYDRO SOLUTIONS FOR
CITYWIDE GROUNDWATER MODELING AND ANALYSIS, AND
FURTHER APPROPRIATING FUNDS

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WHEREAS, management of the City's groundwater resources has become increasingly complex and important, and in September 2012, the City will start up the surface water treatment plant that will reduce groundwater extraction by 7,000 acre feet per year or more than 40 percent below current levels; and

WHEREAS, in 2008, Treadwell & Rollo prepared a groundwater flow and contaminant transport model (model) that has been used to predict the movement of volatile organic compounds (VOC), such as PCE, within the Central Plume Area; and in February 2012, the City entered into a professional services agreement with Applied Remedial Technologies to include DBCP water quality data in the model. Results of that work identified three separate DBCP plumes in the northwest, northeast, and southern areas of the City; and

WHEREAS, as the City brings on line the surface water treatment plant, it is appropriate to establish a new strategy for operation of the City's well field that is focused upon optimized coordination with surface water deliveries and the containment and/or treatment of the DBCP and VOC plumes that are present in the groundwater beneath the City; and

WHEREAS, the services of Treadwell & Rollo and EcoGreen Hydro Solutions (formerly Applied Remedial Technologies) will expand the model to include the Central, Southern, Western and Northern VOC plumes and the three DBCP plumes. The model will be used to simulate the migration of the plumes under various well field pumping scenarios and to optimize locations for monitoring wells in the Northern, Southern, and Western plume areas.

NOW, THEREFORE, BE IT RESOLVED that the Lodi City Council does hereby authorize the City Manager to execute Task Order No. 24 in the amount of \$37,780 with Treadwell & Rollo, of Oakland, California, and a Professional Services Agreement in the amount of \$45,340 with EcoGreen Hydro Solutions, of Sunnyvale, California, for citywide groundwater modeling and analysis; and

BE IT FURTHER RESOLVED that funds in the amount of \$100,000 be appropriated from the PCE/TCE Rates Fund.

Dated: August 1, 2012

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I hereby certify that Resolution No. 2012-116 was passed and adopted by the City Council of the City of Lodi in a regular meeting held August 1, 2012, by the following vote:

AYES: COUNCIL MEMBERS - Hansen, Johnson, Katzakian, Nakanishi, and
Mayor Mounce

NOES: COUNCIL MEMBERS - None

ABSENT: COUNCIL MEMBERS - None

ABSTAIN: COUNCIL MEMBERS - None


RANDI JOHL
City Clerk